

Direct Venting Wood-Fired Pizza Ovens

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Code/edition/section: 2022 Oregon Mechanical Specialty Code (OMSC)—Section 507.2.2

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Subject: Direct venting wood-fired pizza ovens

Question:

1. Can a wood-fired pizza oven utilize direct venting per Section 805.2 or follow manufacturer's venting instructions?
2. When direct vented with a flue/chimney, is a Type I grease hood required per Section 507.2?

Answer:

1. Yes. Section 905 permits installation of solid fuel stoves listed per UL 737 (listing utilizes direct vent). The chimney shall be per Sections 801.7 and 801.10. Section 917.1 requires solid fuel ovens to be listed and labeled in accordance with UL 2162; Section 917.1 does not require venting to be under a Type I hood, nor does the UL listing require a Type I hood.
2. No. If the manufacturer's installation instructions for the listed hood include a connection to a chimney without a hood, then this method is allowed and a Type I hood is not required per Section 507.2.

Analysis:

NFPA 96, Chapter 14, Solid Fuel Cooking Operation, provides nationally recognized standards for the use of natural draft venting outside of a Type I hood.

- Section 14.1.1 and 14.1.4 recognize that natural draft systems can be used under Chapter 14.
- Section 14.1.3: Requires a hood when the appliance "allows effluent to escape from the appliance opening". A listed wood oven contains effluent with a proper draft when installed per listing and manufacturers installation instructions. Therefore, it does not require a hood under these conditions.
- Section 14.7.2: Extinguishing system is not required. "Where acceptable to the AHJ, solid fuel cooking appliances constructed of solid masonry or reinforced Portland or refractory cement concrete and vented in accordance with NFPA 211 shall not require fixed automatic fire extinguishing equipment." This describes most of the listed UL 737 and UL 2162 ovens; therefore, an extinguishing system is not necessary when venting installation instructions do not call for such provisions.

These ovens are listed for burning solid wood fuel. Per pound, the fuel content of pizza is ½ of the fuel content of already ignited wood in the fireplace. And this assumes that the pizza can burn and does not include the effect

of water content in most ingredients. The water in sauce, meat, cheese, vegetables, and dough reduces the chance of ignition and reduces the burning capacity of the pizza.

Grease build-up is negligible in the oven and flue. The operating temperature of a wood-fired pizza oven is 650°F-700°F. The refractory lining of the oven is heated to above the flash point of most fats/oils before the cooking process begins, which if there were any grease build-up would burn off any grease in the oven. The temperatures in the oven approach those seen in a self-cleaning residential oven. The oven operates well above the smoke point of all oils and fats in the oven and the flue temperatures are high enough to ensure that grease does not condense and build up on the flue. The wood oven process is unlike grease laden vapors from a deep fat fryer, which are cooled significantly when mixed with high quantities of exhaust air. Grease cools and condenses on the walls of these systems, creating the fire hazards commonly associated with most Type I systems.

Providing a Type I hood does not improve safety. Disconnecting a tested flue venting system has the potential to decrease safety:

- Wood-burning flue gases will cool more when flowing through a hood, which will increase creosote build-up. Some of the creosote will form where a Type I extinguishing system cannot extinguish the creosote build-up on the hood and exhaust duct should it ignite.
- A Type I hood and extinguishing system are intended for conditions where large pools of grease/oil are present which may ignite in an open kitchen, outside of a firebox designed to enclose a fire. The refractory box of a wood-fired oven is designed to contain such a fire.

Using an exhaust fan to guarantee proper venting of a fire is less reliable than a passive, natural draft flue/vent. A fan can fail or be subject to power outages, subjecting the kitchen to uncontrolled quantities of smoke and products of combustion.

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